



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/757,784

01/10/2001

Roger W. Schmitz

17310-226275

7726

25764

7590

10/23/2003

FAEGRE & BENSON LLP
2200 WELLS FARGO CENTER
90 SOUTH 7TH STREET
MINNEAPOLIS, MN 55402

EXAMINER

SONG, HOON K

ART UNIT

PAPER NUMBER

2882

DATE MAILED: 10/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/757,784

Applicant(s)

SCHMITZ ET AL.

Examiner

Hoon Song

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 12-18, 20, 32-34, 36-38 and 47 is/are rejected.
- 7) ☒ Claim(s) 2-11, 19, 21-31, 35 and 39-46 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 January 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

Figure 1-4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 47 is rejected under 35 U.S.C. 102(b) as being anticipated by Eguchi et al. (US 5568337).

Regarding claim 47, Eguchi teaches a method of measuring a distance between a target and a reference comprising the steps of:

Providing a light beam (801);

Splitting (802) the light beam into a plurality of differentiable beam portions;

Directing the plurality of differentiable beam portions toward a target (805) to be measured;

Detecting images created by simultaneous incidence of the plurality of differentiable beam portions on the target using position sensitive detecting components (808a and 808b); and

Analyzing the output of the position sensitive detecting components due to the location of the detected images on the position sensitive detecting components to calculate a desired distance measurement between the target and the reference (column 1 line 45+).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 12-15-18, 20, 32-34, 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eguchi et al. (US 5568337) in view of Hooker et al. (US 6327520B1).

Regarding claim 1, Eguchi teaches an a measurement device (figure 9):

a light source (801) for producing a light beam;

optics (802) for configuring the light beam as first and second differentiable beam portions, and for directing the first and second beam portions toward a target to be measured, and

a position sensitive detection component (808a and 808b) located to intercept first and second images created by simultaneous incidence of the first and second beam portions, respectively, on the target, and to provide output information representative of the displacement of the target at the first and second locations relative

to a reference based on the position of impingement of the first and second images on the position sensitive detection component (figure 9, column 6 line 39+).

However Eguchi fails to teach the first and second beam portions are directed to first and second locations on the target.

Hooker teaches directing means at two different position of a target.

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to direct the two different polarized beam of Eguchi to different location of a target because it would provide position information for wide range of target (column 4 line 47+).

Regarding claim 12, Eguchi teaches that the optics comprise a projection lens for focusing the light beam toward the target (figure 7).

Regarding claims 13 and 36, Eguchi teaches that the optics further comprise a beam splitting device (802) that splits the focused light beam into first and second differentiable portions.

Regarding claims 14 and 37, Eguchi teaches that the optics includes a polarizer and wherein the first and second differentiable portions of the laser beam are polarized differently from one another (column 6 line 40+).

Regarding claims 15 and 38, Eguchi teaches that the optics further include a beam-directing device (803a and 803b) that directs the first and second differentiable portions in a desired direction (figure 9).

Regarding claim 16, Eguchi teaches that the beam splitting device comprises the beam-directing device and directs both first and second differentiable portions in substantially parallel paths toward the target (figure 9).

Regarding claim 17, Eguchi teaches that the beam splitting device comprises a polarized beam splitting component and a reflecting component (figure 9).

Regarding claim 18, Eguchi teaches that the beam splitting device comprises a polarizing beam splitter that splits the light beam into first and second polarized beam portions and directs the second beam portion toward the target, a quarter wave plate (804a) that rotates at least the first beam portion, and a movable mirror that reflects the rotated first beam portion back through the quarter wave plate and toward the target parallel to the second beam portion, the quarter wave plate again rotating the previously rotated first beam portion such that the rotated first beam portion is 90 degrees out of phase with the second beam portion (column 6 line 40+)

Regarding claim 20, Eguchi teaches that the movable mirror is adjustable to space the first and second locations on the target relative to each other.

Regarding claims 32, Eguchi teaches a method of measuring a z-height distance relative to a reference on a disk drive head suspension, the method comprising the steps of

providing a light beam (801);

directing the first and second differentiable beam portions toward

location to be measured on the head suspension, and causing the beam portions to be reflected from the head suspension (805), wherein paths of the beam portions vary as a function of the x-height of the two locations with respect to the reference;;

intercepting image created by beam portion on the target with a position sensitive detection component (808); and

analyzing displacement data collected by the position sensitive detection component based upon a location interception of the first and second images by the position sensitive detection component to calculate a desired z-height distance measurement for the location on the head suspension relative to a reference (column 3 line 37+).

However Eguchi fails to teach the first and second beam portions are directed to first and second locations on the target.

Hooker teaches directing means at two different position of a target.

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to direct the two different polarized beam of Eguchi to different location of a target because it would provide position information for wide range of target (column 4 line 47+).

Regarding claims 33, Eguchi teaches focusing the light beam after the step of splitting; and

Focusing the first and second images prior to the step of interception (figure 9).

Regarding claim 34, Eguchi teaches that the two locations are different locations on the target (figure 9).

Allowable Subject Matter

Claims 2-11, 19, 21-31, 35 and 39-46 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Eguchi fails to teach that the position sensitive detection component comprises first and second position sensitive detectors positioned to intercept the first and second images, respectively.

Eguchi fails to teach that the beam splitting device comprises a Wollaston prism and wherein the beam-directing device comprises first and second movable mirrors.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ishizuka teaches position detecting system having two illuminating locations (figure 4).

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

Art Unit: 2882

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoon Song whose telephone number is 703-308-2736. The examiner can normally be reached on 8:30 AM - 5 PM, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on 703-308-4858. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Hoon Song HKS



DAVID V. BRUCE
PRIMARY EXAMINER